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ABSTRACT

In the 1990s, federal education legislation and policies have encouraged state and local efforts in educational reform and placed a new emphasis on education for and about work. These initiatives have engaged the active participation of a broad range of partners and have spurred a variety of locally customized programs and practices. Nationally, tech prep and school-to-work (STW) initiatives have been developed and implemented in a political climate that is increasingly devolving funding, responsibility, and accountability to the local level. Evaluation of these efforts must meet local, regional, and federal demands for information that addresses both accountability and program improvement needs. A benchmarking model can be used to begin the process of addressing the challenges faced by evaluators, educators, and policy makers in addressing both accountability and program improvement while meeting the information needs of multiple constituencies. Wisconsin's Cooperative Tech Prep benchmarking model is adapted from tools and processes for continuous program improvement used in the business sector. The model views the evaluation of tech prep and STW through the component practices that make up each initiative. At the heart of this model are a data collection system and self-assessment process intended to provide both local program improvement information and links to district, state, and federal accountability and performance standards requirements. Initial pilot tests show the usefulness of this model as a tool that increases practitioners' understanding of the tech prep and STW practices within their schools. Although a lack of common definitions of component tech prep practices, as well as institutional and attitudinal barriers, has limited the effectiveness of data collection, practitioners have found the process to be a beneficial tool for program improvement. (Contains 48 references.) (Author/KC)

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School to Work Transition: Issues and Strategies for Evaluation and Program Improvement

Working Paper

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School to Work Transition:
Issues and Strategies for Evaluation and Program Improvement

Abstract

In the 1990's, federal education legislation and policies have encouraged state and local efforts in educational reform and placed a new emphasis on education for and about work. These initiatives have engaged the active participation of a broad range of partners, and have spurred a variety of locally customized programs and practices. Nationally, Tech Prep and School-to-Work (STW) initiatives have been developed and implemented in a political climate that is increasingly devolving funding, responsibility and accountability to the local level. Evaluation of these efforts must meet local, regional and federal demands for information that address both accountability and program improvement needs. This paper presents a model for benchmarking that addresses some of these evaluation needs. The benchmarking model presented views the evaluation of Tech Prep and STW through the component practices which make up each initiative. This is in line with Wisconsin's approach to Tech Prep and STW as school reform efforts which apply to all students. At the heart of this model is a data collection system and self-assessment process intended to provide both local program improvement information and links to district, state and federal accountability and performance standards requirements. Initial pilot tests show the usefulness of this model as a tool which increases teams of practitioners' understanding of the Tech Prep and STW practices within their school. Although a lack of common definitions of component Tech Prep practices, as well as institutional and attitudinal barriers, limited the effectiveness of data collection, practitioners found the process to be a beneficial tool for program improvement.

The Evaluation Context

Shifts in federal education policy lead to systemic change, multiple constituencies and increased local autonomy.

In the 1990's, federal education legislation and policy, such as set forth in the Carl D. Perkins Act Title III E Tech Prep program (P.L. 101-392) and the School-to-Work Opportunities Act of 1993 (P.L. 103-239), have encouraged state and local efforts in educational reform and placed a new emphasis on education for and about work. Tech Prep and STW initiatives are being developed and implemented in a political climate that is increasingly devolving funding, responsibility and accountability to the local level. In response, early state and local initiatives have implemented widespread systemic change, engaged the active participation of a broad range of partners, and generated a variety of locally customized programs and practices (Pauley, Kopp and Haimson, 1994). These comprehensive changes present an array of challenges for evaluation. The broad scope of both the Tech Prep initiatives and the School-to-Work Opportunities Act will require evaluation techniques that can bridge the gaps between education and employment, between new institutional relationships, and between unique school practices and long-range student outcomes. In the following section, the federal education policy context will be discussed in light of the challenges it poses for evaluators, educators and policy makers seeking to understand and evaluate these new education initiatives.

In the 1990's, an emerging shift in federal education legislation is driving a broader framework for systemic education reform. Federal legislation is moving toward funding more diverse implementation strategies for educational programming for all students at the local, state and federal level. In a report considering the reauthorization of the Elementary and Secondary Education Act, the GAO summarized the nationwide movement toward system-wide educational reform (GAO, 1993). Driven by the development of a range of local, state and federal standards, systemic educational reform efforts are gaining momentum. For example, the Goals 2000: Educate America Act (P.L. 103-227) is based on principles learned from successful school reform efforts. The act supports "bottom-up" approaches to

school reform by encouraging schools to voluntarily adopt occupational, academic and opportunity-to-learn standards. The act also encourages local involvement in program development and stresses local and state participation in comprehensive program improvement plans (U.S. D.O.E., 1994).

The recently enacted School-to-Work Opportunities Act of 1993 (STWOA) also reflects this shift in the mission of the nation's public schools. STWOA calls for a fundamental restructuring of the educational delivery system, providing a loose framework for organizing state and local initiatives around school-based, work-based and connecting activities. The legislation promotes school-to-work transition as a systemic initiative, grounded in local partnerships which are encouraged to customize school-to-work programs to fit local needs and resources:

> States and localities will take the lead in determining goals and priorities, de eloping new strategies, and measuring progress (Federal Register, October 1993, p. 53388).

These changes are taking place in a political climate that is increasingly devolving funding and responsibility to the local level, increasing local autonomy and providing seed-capitol for the development of locally managed educational systems.

The breadth of STWOA requires extensive participation across institutions, among partners and over time. The legislation encourages the formation of local education and training systems comprised of partnerships among secondary and postsecondary educational institutions, private and public employers, labor organizations, government, community groups, parents and other key stakeholders. This educational initiative expands the institutional boundaries of schools and calls for a dramatic shift in the roles of teachers, administrators, guidance counselors, parents and students.

The act challenges educators to integrate academic and vocational instruction, link school- and work-based learning, step up career development activities, and align secondary and postsecondary educational pathways. Educators will be expected to assume responsibility for the economic futures of students (Berryman and Bailey 1992), and provide a more rigorous career- and technologically-oriented education to

students than what is currently the norm (Phelps, 1992). Similarly, the act will challenge business and community members to assume more extensive roles, beyond simply serving on advisory committees (Phelps, 1995). Business, labor and community members will need to form effective partnerships with educators in order to provide instruction in workplace skills and broad aspects of industry; as well as to lend their expertise in developing skill standards, credentialing and mentor training. All of these roles are required under the new School-to-Work Opportunities Act.

STWOA is not the only piece of federal education legislation and policy placing increased attention on collaboration among service providers, across agencies and between legislative initiatives. Tech Prep, as authorized under the Carl D. Perkins legislation, also requires collaboration between secondary and postsecondary schools in establishing articulation and the necessary linkages for curriculum alignment and sequencing of programming. Under this act, vocational education programming in general is expected to coordinate locally with other federal education and training programs such as JTPA and provide equal access for all students to the full range of programming and services.

Both the Tech Prep and STW initiatives are far-ranging, and require a complex network of programs and practices which will link the education and employment systems. These reforms require the participation of new public\private partnerships which will increase the information demands from multiple constituents with divergent needs. These complex reforms will require systemic development over time, with local programs evolving as resources and expertise are acquired to implement them. This broad context creates conceptual, organizational, and political challenges for evaluators who must contend with multiple sets of goals, philosophies, and information needs. Because School-to-Work is a relatively new initiative, guidelines and procedures for accommodating these multiple needs within evaluation have not yet been set forth. Many of these same problems must also be faced when attempting to examine the development and impact of Tech Prep initiatives.

New initiatives place additional demands on evaluation: the challenge of accountability and program improvement

Increasingly, educators and policy makers are requesting evaluation feedback that informs both accountability and program improvement. There is an increased demand to address accountability both in service delivery (by monitoring program implementation and practices), and program impact (by gathering and analyzing student outcome data). Additionally, educators need information on program processes and practices to help them improve on current efforts and to meet new standards in education. This increased pressure for accountability coupled with the simultaneous demand for school-level information for program improvement suggests the need for evaluation and planning models which link data with program improvement. Addressing these needs is particularly important when assessing long-term educational reform initiatives which are both complex in their processes and far-ranging in their goals and intended outcomes.

An example of this dual demand for accountability and program improvement information is set forth in the Carl D. Perkins legislation. The 1990 Reauthorization of the Carl D. Perkins Act mandated significant changes in federal vocational education policy by requiring an outcome-based accountability system. Outcomes (e.g., academic and occupational skill attainment, program completion and employment) include both student and program accomplishments. The re-authorized act places most of the burden of accountability on the states, while allowing a great deal of flexibility to the states in individualizing performance measures and standards. The act also requires local partnerships to be responsible for program improvement, and to submit local program improvement plans if the state standards are not met. The National Assessment of Vocational Education report states that while states have made progress in developing performance standards and measures, many localities have experienced difficulty implementing performance measures and standards and coherently linking these outcomes to local program improvement (U.S. D.O.E., 1994, p. 285). Effective linkage of vocational education evaluation and planning has been frustrated by a lack of models linking outcome-based performance measures to local

program improvement planning and strategies (Stecher, et al., 1994).

While there is a need to improve the implementation of existing performance measure systems for student and program performance outcomes at the state and district levels (Stecher, et al., 1994; Willms, 1994), there is also a need to complement this data with specific information on individual schools and their programs (Salganik, 1994). Evaluators and researchers have long emphasized that school-level indicators are needed for measuring program success because they account for school-level differences and allow for like-school comparisons. In addition, qualitative and quantitative program information, collected and analyzed locally, can better inform school improvement by enhancing local practitioner involvement and understanding (Porter 1993b; Holcomb 1991; Newman, 1991).

A recent rise in the number of schools implementing site-based management, embarking on significant school restructuring and reform efforts and using TQM processes for local program improvement, is also changing the local context for evaluation. The nature of these reform efforts requires that schools take responsibility for local program planning, development, implementation and assessment. This means that individual schools must assess the quality of their educational processes and practices, and take primary actions for program improvement. As a result, there is now an increased need for locally relevant data collection to help inform these processes (Phelps, 1991).

A review of the literature on educational indicators reveals a trend endorsing the development of both a set of school-specific process and delivery measures (performance measures) and a set of accountability and outcome measures, in order to fully understand school reform and change (Stecher, et al., 1994; Wholey, Hatry, & Newcomer, 1994; Porter, 1993a; Phelps, 1991). Allen Phelps (1991) suggests that a comprehensive and viable performance assessment system should:

1. provide administrators and instructors with information that is useful in improving programs;
2. enable students, parents and others to understand clearly the purposes, intended outcomes and effectiveness of the programs; and

3. provide information for use in determining accountability at the local and state levels.

In an article discussing the development and use of school delivery standards, Andrew Porter supports the need for process standards that are neither minimum standards nor prescriptions. He suggests that school performance standards leading to a system of school input and process indicators should be locally controlled, encouraging teachers and administrators to accept responsibility for local inputs and procedures (Porter, 1993a, p. 29). He states that:

> The indicators would provide useful descriptions of school practices and useful insights into areas needing attention and how they might be addressed.

Porter writes that school process standards are needed to "create a vision for what education can be" and that accountability should be measured as the "school's value-added student performance" (Porter, 1993a, 29). By coupling school delivery standards with student performance accountability, schools will be better prepared to anticipate and adapt to change and educational reform. Porter concludes:

> Whatever strategies and solutions are put in place today must anticipate change. If the history of education reform tells us anything, it tells us that commitment to continuous improvement in education is necessary.... We must build a system that has the requirement to monitor itself and the capacity to change when necessary. (Porter, 1993a, p. 29)

These two-fold pressures for accountability and program improvement information come at a time when education is poised for the adoption of complex educational reform initiatives such as proposed in the School-to-Work Opportunities Act. Clearly, the scope of both Tech Prep and School-to-Work, and the accountability and program information needs of educators and policy makers, present unique problems for evaluation. In particular, evaluators of these initiatives will need to:

1) coordinate the evaluation needs of participating education, business, labor and government institutions;
2) understand the connections between school-based practices and student-based outcomes; and
3) provide locally relevant information meaningful for program improvement.

The benchmarking model presented in the following sections proposes to address many of these challenges facing evaluation of such educational reform initiatives as School-to-Work and Tech Prep.

Adapting a Benchmarking Model for Education

The benchmarking model presented in this paper seeks to begin the process of addressing the challenges faced by evaluators, educators and policy makers in addressing both accountability and program improvement, while meeting the information needs of multiple constituencies. The benchmarking model is adapted from tools and processes for continuous program improvement used in the business sector. The model is intended to be a framework for school self-assessment and data collection which feeds into the school planning process and applies continuous improvement strategies. The model is *not* intended to be a complete evaluation system; rather it is a process which, through the use of a set of tools, promises to address the wide range of information needs of evaluators.

The research activities associated with designing and testing a benchmarking system for Wisconsin's School-to-Work and Tech Prep initiatives provide the basis for this model. Prior to designing the benchmarking model, project staff reviewed literature on performance measures and standards, vocational education programming, and school and student indicator systems (e.g., Barton, 1994; Porter, 1993a). Additionally, project staff studied literature on the Effective Schools process (Rossmiller & Holcomb, 1992; Holcomb, 1991; Newman, 1991), Total Quality Management (TQM) in educational settings (e.g., Rinehart, 1993; Schenkat, 1993; Bonstingl, 1992; Bragg, 1992; Spanbauer, 1992, 1987), benchmarking (McNair & Leibfried,1992; Spendolini, 1992; Camp, 1989) and the use of benchmarking in education (Seymore, 1994; Inger, 1993a; Marchese, 1993). Locally relevant information was gathered from Wisconsin state policy reports, program applications and legislation. Stakeholders were consulted through independent interviews with agency staff, project advisory meetings with school administrators and focus group

sessions with in-school practitioners. The resulting benchmarking model, while specific to the state of Wisconsin, offers lessons for other states and schools attempting to use this process to evaluate and improve similar initiatives.

Prior to developing a benchmarking model for educational settings, project staff reviewed and adapted benchmarking models and practices developed by and for business and industry.

In the business sector, benchmarking is a process that begins with self-study. It involves the systematic collection of internal data and information which allows the business to compare its own processes with similar processes used in other organizations. Information, ideas and data obtained from these other organizations contribute to planning and program improvement in a continuous improvement cycle (McNair & Liebfried, 1992; Spendolini, 1992; Camp, 1989).

The practice of benchmarking promises to disclose gaps between perceived and actual performance, and overcome complacency by exposing inaccurate perceptions. The benchmarking process accomplishes this through exhaustive internal self-analysis of processes, practices and data collection. The data collection serves to establish a baseline from which to compare with other organizations, and provides a basis for setting localized targets against which to measure performance improvement. The self-assessment of practices and processes, combined with data collection and analysis, allows for in-depth and meaningful comparison with other organizations. The comparison between organizations is a source for innovative ideas for correcting (or even eliminating) problems and uncovering emerging practices that can focus future efforts towards continuous improvement (Economist Intelligence Unit, 1993; Inger, 1993a).

While benchmarking is a relatively new concept, many lessons have already emerged from those businesses using the benchmarking process. First, it is essential to include and meet the needs of all stakeholders when designing and conducting a benchmarking investigation (McNair & Liebfried, 1992; Spendolini, 1992). Second, successful benchmarking involves identifying core issues (McNair & Liebfried, 1992) and focusing on specific processes and program improvement needs (Spendolini,

1992). Attention to thorough self-assessment and maintenance of relevant data for follow-up are also keys to benchmarking success (Spendolini,1992).

In designing a benchmarking process for schools, several organizational and institutional factors which differentiate schools from businesses were noted. The underlying incentives for business to improve their processes and programs are inherently different than those faced by schools. In business, the "bottom line" is profit -- increasing the profit margin in a highly competitive market requires focusing on customer satisfaction and by improving efficiencies in production. For schools, the focus is on providing quality education for students. However, schools are hard pressed to identify a distinct "customer"-- education is considered to be a public good, a benefit to all, including students, parents, community members and employers. Each of these "customers" have unique demands, and improving educational satisfaction requires that broad range of educational outcomes be met. Furthermore, information on business products and efficiency is easily quantified, while information on quality and efficiency in education is not.

As noted earlier, broad educational initiatives such as School-to-Work and Tech Prep consist of a variety of locally customized approaches. The benchmarking process is ideally suited to analyze these local efforts because the process of benchmarking focuses on self-assessment of "components," or practices and processes. The benchmarking process allows for self-assessment of locally developed components and practices while encouraging data collection relevant to the improvement of these activities. It is therefore not necessary to establish an identifiable "product," as the unit of analysis is component-based.

It should be noted that the benchmarking model is less of an evaluation model than a program improvement strategy which incorporates such evaluative *concepts* as problem assessment and data collection. The use of this strategy assists evaluation by creating a climate where data collection and evaluation are seen as a natural part of program development. In such a climate, practitioners are more likely to take ownership of data collection and evaluation procedures, increasing the likelihood of valid and reliable data collection. Data is seen not as a threat, but as a

tool.

In adapting these facets of the benchmarking process for use in an educational setting, attention was placed on developing a set of program components, and both a process and a set of data collection tools, to provide information on those component areas to a variety of stakeholders. The following sections will detail the benchmarking model designed for use in the Wisconsin Cooperative Tech Prep Benchmarking Project.

Wisconsin's Cooperative Tech Prep Benchmarking Model

The model presented below represents an innovative approach to the use of benchmarking to bridge the gap between accountability and program improvement. This model was originally developed through a project funded by the Wisconsin Department of Public Instruction, Wisconsin Technical College System, and Wisconsin Council on Vocational Education to establish a benchmarking system for Tech Prep in Wisconsin. This project was designed to meet the needs of a number of constituencies, including both state-level agency representatives and local practitioners. To do so, a number of goals were developed:

- Validate existing performance measures and standards;
- Validate the existing "Quality components" which make up Wisconsin's goals for Tech Prep;
- Define Tech Prep as it exists in Wisconsin based on the practices actually in place; and
- Establish a benchmarking system which would accommodate the needs of state policy makers and local practitioners.

The structure of Tech Prep and STW in Wisconsin necessitated taking an novel approach to both benchmarking and evaluation. In Wisconsin, Tech Prep is generally seen as a school reform efforts, not as a distinct program. Each is a set of educational processes and practices applied across the curriculum. For this reason, there is no defined cohort of "Tech Prep Students." Rather, Tech Prep represents strategies used with all students. This presents difficulties for evaluators wishing to define and

follow such a cohort of students. Furthermore, there is no set of standardized Tech Prep strategies applied among Wisconsin schools. Instead, secondary schools are loosely tied together in a number of consortia, each of which has been developed around a technical college. This has lead to the development of a wide range of different approaches to Tech Prep. There is little agreement on what constitutes Tech Prep, and no consistency among the definitions guiding the different practices brought together under the Tech Prep initiative.

Benchmarking the Implementation of Educational Practices

Because there is no cohort of Tech Prep *students* in Wisconsin, this benchmarking process focuses on the quality and nature of educational *practices*. This represents a shift in the unit of analysis from the student to the implementation of educational practices. The student is considered within this process; however, the focus is on the level of implementation of a given set of practices: whether or not a given element of Tech Prep is in place, the level of implementation of that element, the rate at which students participate in it, and the rate at which desired outcomes are experienced by these students.

This focus on the level of implementation of a given set of practices is also necessitated by the fact that Tech Prep differs from one Wisconsin school to another. Local systems are free to implement these practices in the way that best fits local needs. Focusing on practices and organizing these practices into a taxonomy of component areas provides the flexibility necessary to accommodate the diverse nature of Tech Prep as implemented by these many different local systems.

Seven Component Areas of Tech Prep

Seven component areas of Tech Prep were identified through focus groups and input from project stakeholders. Participants in these focus groups were asked individually to list all of the elements of Tech Prep necessary for a successful program. Together they sorted these elements into groups of common practices and gave each group a summative title. Project staff then examined and refined these

groupings in light of the existing literature on successful Tech Prep (e.g., Bragg, Kirby, Puckett, Trinkle, & Watkins, 1994; Bragg & Layton, 1994; Pauly, Kopp, & Haimson, 1994; Illinois State Board of Education, 1991; Carl D. Perkins Applied Technology and Education Act Amendments, 1990, P.L.101-392). The resulting taxonomy of Tech Prep components follows.

- Access
- Articulation
- Career Development
- Collaborative Partnerships
- Curriculum Development
- Professional Development
- Work-based Learning

These component areas provide the foundation for this model, giving it the flexibility needed to adapt to the many different ways Tech Prep has been implemented. This taxonomy also provides a powerful shorthand for practitioners to discuss the many and varied aspects of Tech Prep development. Such a shorthand helps categorize and define what Tech Prep is, easing the difficulties inherent in communicating about these diverse practices.

Benchmarking Tools

The seven component areas also provide a framework which links the different tools developed for the Tech Prep benchmarking process. Two categories of tools were developed for use with this model: self-assessment tools and data collection tools. Both types of tools help practitioners focus on what they are doing in Tech Prep; identify strengths, gaps, and problems; decide which areas need improvement; and determine whether changes they make are effective.

Self-Assessment Tools

The primary self-assessment tool is the Tech Prep Implementation Checklist. The checklist provides a team of practitioners with a framework for examining and discussing their perceptions of the present level of implementation within each of the

seven component areas in their school. This checklist presents practitioners with a number of questions about their implementation of different elements of Tech Prep. For example, a question about career development asks: "Do all students have access to national, state, and regional labor market information?" Through group discussion, the team arrives at consensus about the extent to which their school has implemented the practice addressed in the question. In addition, they are free to state that a given element is not applicable to their local Tech Prep philosophy. These questions also act as a staff development tool, pointing out areas where the team may need to do some planning and providing an overall sense of the possible breadth and quality of Tech Prep programming and activities. In this way, the checklist serves a programmatic function without being threatening or didactic.

Data Collection Tools

Information about the extent of implementation, participation, and outcomes of Tech Prep is gathered using a set of qualitative and quantitative benchmark measures (See Figure 1). Aligned with both federal and Wisconsin specifications for quality Tech Prep education, these benchmark measures provide a mechanism for assessing both the level of implementation and the quality of Tech Prep practices at the local level. Each component area is examined in terms of implementation, student participation, and the outcomes experienced by those students. Implementation benchmarks are either qualitative descriptions of the practices within a component of Tech Prep or STW, or a quantitative measure of the extent to which Tech Prep practices are available within the school. Where implementation benchmarks reveal the quality of Tech Prep implementation, participation benchmarks indicate the depth. Participation benchmarks reflect the percentage of students and teachers involved in each Tech Prep component. Outcome benchmarks are used to measure the efficacy of each Tech Prep component. These measures are based on the acknowledged goals of each Tech Prep component, and are generally focused on what happens to students after high school. Furthermore, the outcome benchmarks for each component area are specifically tied to that area's implementation and

Preliminary Tech Prep Benchmarks

Component Area	Level I Benchmark (Implementation)	Level II Benchmark (Participation)	Level III Benchmark (Outcome)
Access	Inclusive Strategies List	% of SP & M/F w/ Earned Articulated Credit -Adv. Standing* - Transc. Credit* % of SP & M/F in I&A Courses	SP/MF HS Completion Rate SP/MF PS Enrollment Rate SP/MF PS Completion Rate
Articulation	% Articulated Courses Available -Adv. Standing* - Transc. Credit* Subject Areas Articulated (% Courses w/in?)	% Students Earning Articulated Credit -Adv. Standing* - Transc. Credit* (By Subject Area?)	% Students Using Articulated Credit -Adv. Standing* - Transc. Credit* PS Enrollment Rate (Semester Following Graduation)* PS Graduation Rate (w/in 3 years)*
Career Development	Career Development Timeline	% 9th -12th Grade w/ Career Plans* % Participating in Job Shadowing	PS Job Placement Rate % Placed in Technical Careers
Collaborative Partnerships	% Non-School Personnel on HS TP Committee	% of HS TP Budget from Alternative Funding Sources (Not F, S)	% of HS Implementation Goals Achieved
Curriculum Development	% of I&A Courses* Subject Areas Integrated	% of Students Enrolled in I&A Courses	% Achieving Above Standard on Math, Science, Language WSAS HS Graduation Rate
Professional Development	# PD hours Allocated to TP* (% of each type)	% Teachers & Counselors Participating in Tech Prep PD	% Teachers Implementing I&A
Work-Based Learning	# of WBL Options Available -YA -Co-Op -Other	% of Students Participating in each WBL Type*	WBL PS Enrollment Rate WBL Post HS Job Placement Rate

* Aligned w/ a Tech Prep Performance Measure

Figure 1: Preliminary Benchmarks for Tech Prep and School-to-Work

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participation benchmarks. This allows for an in-depth examination of the effectiveness of varying levels of implementation of and participation in specific Tech Prep practices.

Bundled with these benchmark measures are recording sheets and data collection tools designed to assist practitioners in collecting data in a reliable and valid way. Preliminary investigations into practitioners' views of data collection made during focus groups indicated that many schools lack capacity and/or are not institutionally prepared to collect and make use of data. These data collection tools were designed with this in mind. In most circumstances, practitioners completing these data collection forms are asked to list individual courses, strategies, or events, to provide some basic qualitative program descriptions, and to indicate the number of people participating in each (See Figure 2). Rarely are they asked to list aggregate data. Whenever possible, common and/or important elements have been included as check boxes to facilitate reliable reporting. The goal of designing the data collection in this way was to allow practitioners with little or no experience collecting and using data to experience success doing so.

In line with this, a great deal of attention was paid to making these tools as user-friendly as possible. The data collection tools were designed to be useful in and of themselves, providing a place where practitioners could organize a wide range of necessary information. They were also designed to align with existing state-level accountability systems, particularly the performance measures developed by Wisconsin's Tech Prep State Management Team under Title IIIE of the Perkins Act. This serves to ease the data collection burden on schools, as they can collect the same data for different purposes.

Through the use of both types of tools, self-assessment and data collection, teams of local practitioners are able to focus their attention on specific aspects of Tech Prep in their school or district. The goal is to identify the level of implementation of specific, existing practices as well as to identify and describe problems or gaps at a manageable, tangible level. This allows practitioners to move beyond rhetoric and anecdotal information and determine the underlying factors behind both their

Integrated/Applied Courses & Projects

If course project integrates more than one area within a subject (e.g. biology and chemistry), check that subject and indicate the number of areas integrated next to it (e.g. Science 2)

Name of Class or Project	Subject Areas Integrated	Grade Level(s)	Number of Teachers	Enrollment	Integrated/ Applied	Type
	❑ Math ❑ Technology ❑ Science ❑ Communications ❑ Other(s):				❑ Integrated ❑ Applied ❑ Both	❑ 1 Sem Course ❑ 2 Sem Course ❑ Project Duration: wks
	❑ Math ❑ Technology ❑ Science ❑ Communications ❑ Other(s):				❑ Integrated ❑ Applied ❑ Both	❑ 1 Sem Course ❑ 2 Sem Course ❑ Project Duration: wks
	❑ Math ❑ Technology ❑ Science ❑ Communications ❑ Other(s):				❑ Integrated ❑ Applied ❑ Both	❑ 1 Sem Course ❑ 2 Sem Course ❑ Project Duration: wks
	❑ Math ❑ Technology ❑ Science ❑ Communications ❑ Other(s):				❑ Integrated ❑ Applied ❑ Both	❑ 1 Sem Course ❑ 2 Sem Course ❑ Project Duration: wks
	❑ Math ❑ Technology ❑ Science ❑ Communications ❑ Other(s):				❑ Integrated ❑ Applied ❑ Both	❑ 1 Sem Course ❑ 2 Sem Course ❑ Project Duration: wks

Figure 2: Sample Data Collection Sheet

successes and their problems. In addition, this level of specificity is required when the teams seek out others' "best practices." When attempting to discover how others have successfully implemented a particular practice or solved a problem, questions which remain at a general level are likely to yield answers which will not be of any assistance. Finally, this process of narrowly defining areas to work on keeps the problems to be solved to a manageable scale, thus increasing the likelihood that practitioners will experience success with the process and continue to use it.

Once the team members have an understanding of where they are in the implementation of Tech Prep as well as an understanding of some of the gaps and problems they face, their next step is to seek out others who have successfully dealt with such implementation. These best practices then become a source of ideas, information, and strategies which can be adapted to meet local needs. As these strategies are adopted, continued reassessment of the existing level of implementation will help monitor the success of these strategies as well as indicate directions for future attention.

The remaining sections of this paper describe a pilot test of this model with six schools engaged in the implementation of Tech Prep. In these sections, the operationalization of this model in terms of specific tools, processes, and activities will be discussed, as will the results of this pilot test. The final sections of this paper will summarize the lessons learned from this pilot test and suggest directions for future development and research.

Pilot Test

In order to validate this model of the benchmarking process, six schools were recruited as pilot test sites. Suggestions for possible pilot site schools were elicited at a state-wide gathering of Tech Prep practitioners. Particular emphasis was placed on schools which had made significant progress in the implementation of Tech Prep. From these suggestions, six schools were chosen to represent a cross section of Wisconsin high schools in terms of size; rural, suburban, or urban location; and

willingness to participate. The four technical colleges affiliated with these six schools were also recruited. Table 1 Lists these schools, their sizes and location, and technical college affiliations.

High School	Size	Location	Technical College
School A	1176	Urban	TC 1
School B	1186	Suburban	TC 2
School C	1569	Urban	TC 3
School D	200	Rural	TC 3
School E	345	Rural	TC 4
School F	520	Rural	TC 4

Table 1: Pilot Site Schools

Once each pilot site was identified, a contact person at each site gathered together a team of local stakeholders, including administrators, teachers, and community members. A representative of the technical college was also invited to participate on this team. In some cases this team was identical to the local Tech Prep coordination team. These teams ranged in size from seven to fifteen people.

Pilot Site Visits

The pilot test consisted of two site visits and a networking session. In addition, pilot site personnel were asked to collect data on the implementation of Tech Prep in their school. Materials and processes specifically designed to facilitate the benchmarking process were used at each site visit. These materials and processes will be discussed as they were used in the pilot test. There were two facilitators present at each visit. These facilitators directed activities, answered questions, and made observations of the process.

Site Visit One

The first site visit represented an opportunity for the local benchmarking team to come to a common understanding of what Tech Prep was in their school and the nature and extent of their implementation of Tech Prep. This first visit lasted eight hours, and was divided into three parts: Identification of local critical success factors, completion of the Tech Prep Implementation Checklist, and discussion of the school's perceived strengths and weaknesses.

Critical Success Factors. In order to focus team members' attention on Tech Prep implementation and bring to light diverse views of what Tech Prep is and what it should accomplish, team members were asked to brainstorm answers to the following four questions:

1. What are the most critical factors for Tech Prep success?
2. What specific operational problems have been identified in your school?
3. What external pressures are being felt by your school?
4. Which areas have the greatest room for improvement?

Each of these questions was considered separately. The affinity process was used to generate a list of answers which included input from all team members.

The Tech Prep Implementation Checklist. The Tech Prep Implementation Checklist was designed to offer team members a way of structuring the investigation of their current level of Tech Prep implementation. The checklist consists of a number of questions arranged according to the seven component areas, with a number of "subcomponent areas" within each component. These component and subcomponent areas are listed in Table 2 below.

ACCESS Recruitment/Enrollment Assessment Support Services Related to Tech Prep Classroom Accommodations Related to Tech Prep Inclusive Approaches/Strategies
ARTICULATION Articulation Agreements Transcripted Credit/Dual Credit Advanced Standing Credit Postsecondary Linkages
CAREER DEVELOPMENT (EXPLORATION & PLANNING) Career Exploration Curriculum Map/Career Map Career Major Career Plan Career Portfolio Career Development Activities Job Shadowing
COLLABORATIVE PARTNERSHIPS Tech Prep Coordinator Active Participation/Contribution Collaborative Partners Strategic Planning Communication and Marketing
CURRICULUM DEVELOPMENT Integrated & Applied *Instruction* Integrated & Applied *Content*
PROFESSIONAL DEVELOPMENT Faculty Internships/Job Shadowing Opportunities Joint Inservice/Staff Development Opportunities
WORK-BASED LEARNING (WBL) Work-Based Learning

Table 2: Implementation Checklist Components and Subcomponents

Using existing literature (e.g,. Bragg, Kirby, Puckett, Trinkle, & Watkins, 1994; Bragg & Layton, 1994; Pauly, Kopp, & Haimson, 1994; U.S.D.O.E., 1994), practitioner and agency-level focus groups, and federal and state legislation as a foundation, the

checklist questions were developed to reflect a consensus view of quality Tech Prep education. Each question asked about a specific aspect of Tech Prep such as, "Do all articulation agreements list the postsecondary competencies to be achieved in each articulated high school course?" Team members responded that this element of Tech Prep was either "In Place," "Implemented," or "Planned." Team members could also indicate that they "Should Plan" a given element, or that an element was "Not Applicable." This last response was included to give team members a way to indicate that an element of Tech Prep as listed on the checklist did not align with their local intentions for Tech Prep development.

Team members progressed through the checklist, question by question, as a group. Discussion was encouraged for each question, although time limitations necessitated that the facilitators keep this discussion fairly focused. In order to answer a question, the team had to reach consensus on the level of implementation of that element of Tech Prep. In doing so, it was expected that team members would contribute knowledge about their own Tech Prep activities and learn about those aspects of Tech Prep outside of their own experience.

Strengths and Weaknesses. One goal of benchmarking is to focus discussion on one tangible aspect of the process under consideration. To do so, members were asked to identify a component area of strength and an area needing improvement. This was done using the information gained through the Critical Success Factors and Implementation Checklist activities. In cases where the group could not come to consensus, the nominal group process was used to vote on the areas of strength and improvement.

Once the area of strength and the area needing improvement were identified, the team was divided into two groups. One group focused on the area of strength and the other focused on the area needing improvement. Each of these two groups was asked to brainstorm what aspects of that area were already in place and what aspects of that area were missing. This served to further focus the team on the specific, tangible elements and practices involved in Tech Prep. Following this, the

whole team met once more, and each group shared their lists. The whole team was then given the opportunity to add to any of these lists. The site visit ended with team members completing a survey designed to give formative feedback on that day's activities.

Data Collection

Following the first site visit, contact people at each school and technical college were asked to complete a set of data collection forms. Based on the Tech Prep Benchmarks listed above, these data collection forms provided a standardized way to collect meaningful comparison information about each school. This data would supplement the information gained from the Implementation Checklist and would be used to provide a detailed picture of the depth of Tech Prep implementation and student participation at each school.

This data, combined with responses to the implementation checklist, was used to create a Tech Prep Implementation Profile for each school. This profile listed each school's benchmark data for each Tech Prep component, as well as demographic information which could be used for ensuring meaningful, like-school comparisons.

Site Visit Two

Where site visit one represented an opportunity for team members to examine broadly the implementation of Tech Prep in their schools, site visit two gave them the opportunity to focus in on the specific area needing improvement identified in the first visit. This four hour session began with a review of the results of the first visit's activities. Team members were then given copies of their school's implementation profile, which they reviewed and commented on. Next, team members reviewed the list of what was missing from their area needing improvement and identified gaps. After a short discussion in which members could add additional elements, team members used the nominal group process to prioritize these missing elements and selected two for further analysis.

Team members were then divided into two groups, with each group given responsibility for one of the missing elements. Each group was given the goal of brainstorming a list of the gaps and barriers which have prevented this missing element from being implemented. Once this list had been created, each group developed specific questions it could use to find out how other schools had overcome those gaps and barriers. The goal of this exercise was to get team members to look at a specific aspect of Tech Prep in their school in detail and generate questions that could be used to guide their discussions with other schools during the networking session. Once both groups had finished generating a list of questions, their lists were presented to the whole team for discussion. As in the first, this visit ended with team members completing a survey designed to give formative feedback on that day's activities.

Networking Session

The goal of the networking session was to bring the teams from all six schools together to share their insights into the implementation of Tech Prep, reflecting on the checklist results, implementation profiles, areas of strength and improvement, and the questions generated in the second site visit. This meeting was held at the University of Wisconsin-Madison, and lasted four hours. Five of the teams were able to attend the meeting; the sixth was unable to attend due to inclement weather.

During this session, teams were given two opportunities to network with their peers. The first was unstructured, which allowed them to get to know each other and find out about each school's strengths in Tech Prep. To facilitate this, each school was asked to bring examples of materials they had developed. These materials were arranged on tables around the meeting room so that team members could examine them.

The second networking opportunity was more structured. Each school was assigned a table, and while some team members sought answers to their questions about their area needing improvement, others remained at that table to answer questions from other schools about their area of strength. The questions served to

facilitate discussion, and directed their conversations toward detailed, meaningful strategies for implementing and improving Tech Prep.

After this second networking opportunity had taken place, participants returned to their teams and collated the information they had gathered. To assist this they were given a number of "strategy summary sheets" which asked them to list each strategy, its source, and the pros and cons of implementing it in their own school. These sheets were designed to facilitate the development of action plans, thus linking the information gathered through the benchmarking process to each school's planning processes. Each team filled out a number of these sheets as members shared the strategies they had found.

Following instruction on how to develop action steps from these strategies and how to report their findings to their school's planning teams, participants were asked to complete two surveys. The first asked for summative information about their perceptions of the benchmarking process and their opinions of the impact it would have on their Tech Prep efforts. The second survey gathered their opinions on the use of data in their planning and decision-making processes. At this time participants were also given directories listing contact information for other pilot participants in the hope that they would continue the networking relationships they had started. Following this networking session, summary reports on each school's findings were developed and distributed to participants. Continued technical assistance was also provided as requested.

Results from the Pilot Test

This discussion will focus on participants' views of the benchmarking process, rather than on the implementation of Tech Prep in any or all schools. Combining responses from the four surveys indicated above with facilitators' observations yields a comprehensive picture of the strengths and weaknesses of this process. To structure this discussion, observations concerning the benchmarking process will be separated from those concerning data collection.

The Benchmarking Process

On the whole, participants found this process to be both engaging and rewarding. When asked to rate the usefulness of this process on a seven-point scale, 83% rated it 5 or better. The mean response was 5.2. Areas in which they thought it was most useful were planning and program improvement (30%), determining current program status (30%), and focusing the group and individuals on priorities (20%).

When asked to rate the impact of this process on classroom practice, however, they were less positive. Again using a seven-point scale, 26% rated it 5 or better. The mean response was 4.0. Barriers to this process having an impact on classroom practice include: a need to extend the process and resulting information to all staff (24%), the process requires a lot of time and effort (20%), and a lack of administration follow-up or support (12%). On the positive side, 20% felt that the process developed greater awareness and buy-in on the part of staff.

While participants were unsure of the impact this process will ultimately have on classroom practice, a majority (67%) felt that they would continue to use it to further their implementation of Tech Prep. No respondents said that they would not continue to use this process, and 17% were unsure. Respondents gave a number of reasons why they would or would not continue to use this process. Reasons for continuing include: the process is very helpful (29%), focuses attention (4%), produces results (4%), and validates existing processes (4%). Reasons for being unsure about continuing include: continuation depends upon administration leadership (8%), needing community resources (4%), and a lack of staff development time (4%).

Participants were also positive about their ability to use this benchmarking process with other changes they are making in their school. A majority (83%) stated that they would be able use this process for other changes. No respondents said they would not use this process, and 10% were unsure. The predominant reason they would use this process in other areas was that it was a sensible, practical, and useful process (42%). Some felt they would be able to use it because it was adaptable (11%). Others expressed reservations, stating that they would be able to use this process

only if more administrators and teachers were involved and followed-through on the results (26%).

These survey results agree with facilitators' observations and responses from the formative surveys. In general, participants found this process to be quite helpful in improving their understanding of Tech Prep within their school. Quite often it was obvious that there was not a common understanding of what Tech Prep was amongst team members, and this lack of a common philosophy often hindered their attempts to communicate with parents and students and recruit teachers. In particular, they found the Critical Success Factors and implementation checklist activities to be invaluable in structuring their dialog and helping them develop a common understanding.

For a number of schools, the benchmarking process became a staff development activity. Team members in these schools used the checklist and other activities to assist their fellow teachers and administrators in their understanding of Tech Prep as it was implemented in their school. In many cases, a number of the stakeholders within a team were unaware at the start of the process of what Tech Prep was in their school and the extent to which it had or had not been implemented.

Whereas the benchmarking process pointed out that a number of these schools had no common philosophy of Tech Prep, it also indicated a lack of specific definitions for many of the elements within Tech Prep. For example, team members in many schools were unsure as to what a career plan was, or what specifically was involved in an integrated and applied course. Even in those schools which had definitions for these elements, there was often as much discrepancy in definitions amongst team members as there was amongst schools.

Data Collection

Although the self-assessment process was successful, the data collection and implementation profile aspects of the process met with considerable difficulty and resistance. Many of the participants viewed data collection suspiciously, and were concerned about the negative effects that the numbers could have. Others felt that it

was too much trouble to collect reliable and valid data. In many cases, institutional structures supported this latter belief, making it very difficult, and in some cases impossible, to access data. A widespread concern was a lack of definitions for the practices which they were collecting data on. Many practitioners were unsure of what to count under such Tech Prep practices as integrated and/or applied curriculum, career plan, and career cluster. Some of the specific concerns about data collection that were raised include: bias and lack of definition of the data being collected (48%), comparison and ranking of schools (24%), use of data for staff or budget reductions (15%), and concerns over accuracy (14%).

The perception of the facilitators at the beginning of this process was that there was little understanding of the uses of data in program improvement. By the end of the process, however, it seemed that more participants had come to believe that data could be useful. When asked to rate the usefulness of the type of data collected in the Tech Prep Implementation Profile on a seven-point scale, 67% rated it 5 or above. The mean rating was 5.2. When asked what the uses of this type of information might be, 39% said program improvement, 35% said justification for funding and resources, and 26% said dissemination, marketing, and public relations.

Participants were asked how likely they were to collect data when developing or changing their educational practices. Again using a seven-point scale, 70% rated themselves 5 or higher. The mean response was 4.9. Twenty five percent said that such data could be used to inform and validate change. Twenty five percent said that they have already done so, and 19% said that it needed to be done. Thirteen percent said that they did not know how, and 13% said that they did not have the time or resources to do so.

Participants were also asked about the barriers to gathering and analyzing data which they perceive in their schools. These barriers include: lack of time (39%), lack of money and resources (17%), no definitions or guidelines on what to measure (15%), lack of awareness or interest in collecting data (10%), lack of knowledge and tools for collecting data (7%), and problems with the accuracy of data (7%).

Summary Discussion

The benchmarking model laid out in this paper seeks to accommodate local practitioners' needs for information for use in program improvement, while providing policy makers with a way to collect the information they need to ensure program funds are spent appropriately. This is accomplished through self-assessment and data collection systems that are aligned with state-level performance measures and give local practitioners ownership of the data collected in their school. Ideally, local practitioners collect data on all of the various benchmarks specified above for their own program improvement purposes, and pass the information relevant to state-level performance measures on to relevant state agencies.

The pilot test of this model validates the componential structure of the self-assessment and data collection tools. Local practitioners and state-level policy makers both agreed that this practice-focused approach met their requirements for a way to look at diverse programs without identifying a specific Tech Prep or STW track. Pilot site participants also found both the self-assessment and data collection tools useful for understanding the extent and nature of their Tech Prep implementation.

Self-Assessment Tools

Participants in this pilot test found the self-assessment tools, particularly the Tech Prep Implementation Checklist, beneficial in the way they guided and enhanced their team's reflection on the nature and level of implementation of Tech Prep practices in their school. They felt that this process helped develop a greater understanding of the full range of practices included under the Tech Prep umbrella and provided an excellent staff development opportunity which promoted staff understanding and collaboration.

Use of these self-assessment tools also pointed out the need for common definitions both within and among schools implementing Tech Prep. Much of each team's discussion centered around differences in interpretation of various labels, such as "Career Major" and "Integrated and Applied Course." Quite often there was little

agreement on what a given label referred to. This divergence was even greater across schools. Many of these labels meant very different practices in different schools. Furthermore, Tech Prep meant very different things in different schools. In many cases, Tech Prep and STW were considered to be the same, referring to wide-scale secondary or K-12 reform efforts. In others, there was more of a focus on meeting the needs of non-college bound students. One school opted not to call its efforts Tech Prep or STW, instead focusing on career development practices through a "Personal Development Plan."

Data Collection Tools

Participants were less enthusiastic about the data collection tools. While many saw the usefulness of data collection for program improvement, most were suspicious about the possibility that data could "fall into the wrong hands." From their point of view, data which highlighted areas in need of improvement could be used against them, either by district- or state-level administrators or in the media. Positive results could also be used against them as a justification for budget or staff cuts. Many felt that there was a strong possibility of data being misinterpreted or misused, and that it should not be collected without strenuous safeguards on the distribution and interpretation of the results.

It is this attitude toward data which is likely responsible for the difficulties all six pilot sites had collecting data for the benchmarks. In many respects, these schools were not institutionally and attitudinally equipped to collect and use this data in a reliable way. For the most part, it was difficult for practitioners to access data on their own programs and students. In some cases this data was not collected by the school. When it was collected, it was either in an unusable form or locked away in a file or database which they could not access. To work around this, some practitioners had to rely on last year's reports to the state Department of Public Instruction for their data. Furthermore, practitioners were unsure of what to include as Tech Prep practices. This results from a lack of generally agreed upon definitions for most of these practices. Together, these limitations place severe restrictions on the

reliability and ultimate usefulness of the data collected.

Next Steps

As a federally funded STWOA Implementation Grant state, Wisconsin is developing a longitudinal evaluation system for use state-wide. Similarities between many components of Tech Prep and STW allow for the use of this benchmarking system and its component structure for both program and student outcome analyses. As a taxonomy for local system analysis, looking at implementation, participation, and outcomes for each of the seven component areas provides the flexibility needed to adapt to diverse local systems and the expected growth within each system. Changes in the nature and level of implementation of these diverse STW practices can be accommodated easily under the qualitative and quantitative approach taken here. Similarly, student outcomes from many diverse schools can be understood through a focus on the practices which lead to those outcomes. In this way, students who have received vastly different forms of STW education are not compared with each other. Rather, it is the practices which are compared, yielding information on which are most effective.

In addition, the STWOA evaluation will provide an opportunity to expand the testing and refinement of the benchmarking model as a program improvement tool. Many of these schools have expressed interest in being involved in this process, and the model will certainly be improved as a result of this use. In this next round, significant attention will be directed toward the improvement of data collection systems and toward addressing the institutional and attitudinal difficulties encountered here. The hope is that this will result in a cohort of practitioners who are able to collect, understand, and use both qualitative and quantitative data for program improvement.

Conclusion

The benchmarking model introduced in this paper is not meant to replace traditional forms of formative evaluation. Rather, the goal of benchmarking is to further local practitioners' program improvement efforts. In doing so, benchmarking supplements formative evaluation by creating a rationale for practitioners to collect reliable and valid data. It also allows practitioners to develop a better understanding of what it is they are doing and why, as well as understanding the accomplishments of others. By combining self-assessment and data collection with a focus on Tech Prep and STW practices, this benchmarking model will give these practitioners the information they need to improve the ways in which they educate students. In addition, the data collected through this process provides a link to summative evaluation. Because this data is collected on a regular basis, it provides both a baseline and a longitudinal source of meaningful information about practices and outcomes.

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